**MONTANA FISH, WILDLIFE & PARKS**
**HUNTING SEASON / QUOTA CHANGE SUPPORTING INFORMATION**

**Species: Mountain Lion**
**Region: 2**
**Hunting District: 200 & 201; 202 & 203; 204, 260 & 261; 210; 211 & 216; 212 & 215; 213 & 214; 240; 250; 270; 280, 281, 284 & 293; 283 & 285; 290, 291, 292 & 298**

**Year: 2013**

1. **Describe the proposed season / quotas changes and provide a summary of prior history (i.e., prior history of permits, season types, etc.).**

We propose to increase quotas for the harvest of female lions across Region 2, based on new research findings.

On May 19, Dr. Kelly Proffitt, FWP's project leader for the Bitterroot Elk Study, obtained and released the results of DNA tests from most, but not all, of the mountain lion samples collected this winter. These results conclusively demonstrate that no fewer than 38 adult female lions were present in Hunting Districts 250 and 270 at the start of the 2012-13 winter season.

These results confirm that Region 2's conservative assumption of adult female lion numbers in the Upper Bitterroot has been at least 39% lower than the actual minimum number of adult females that have been counted. Therefore, the female lion harvests that FWP prescribed and achieved in the 2012-13 season did not accomplish the Commission endorsed objective of a 10% decrease in the lion population, nor would the proposed harvest contained in the Commission's tentative adoption for the upcoming 2013-14 season accomplish that stated objective.

The Region 2 prescription, as originally adopted and enacted, was based on the assumption of a "moderate" lion density provided by Dr. Hugh Robinson, based on earlier FWP research in the Garnet Mountains of Region 2. Dr. Proffitt's new results affirm that actual 2012 lion densities were at least (and likely above) those predicted by Dr. Robinson's "high" lion density model for Region 2.

In order to accomplish the Commission-endorsed objective of a 3-year, 30% reduction in lion numbers across much of Region 2, FWP proposes to increase the adult female harvest to match the best available data, and the "high" lion density model. Failure to increase female lion harvest at this time would nullify the stated benefits of the proposed lion reduction—including a moderation of lion predation on elk calves and mule deer. Alternatively, it might be necessary to extend the harvest treatment to a fourth year.

Following are the proposed final quota adjustments. They simply represent a 39% increase in the female harvest quotas in the tentative adoption, and do not attempt to "make up" for insufficient harvest during the 2012-13 season. A thorough analysis and recommendation will be presented next year, with the full benefit of all of the Bitterroot lion research findings.

**PROPOSED ADJUSTMENTS FOR 2013 COMPARED WITH 2012 QUOTA LEVELS AND THE 2013 TENTATIVE ADOPTIONS**

| Watershed | Hunting District | Female Harvest Quota | Male Harvest Quota | Special Licenses | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |
| | | | 2012 | **2013 Tent.** | **2013 New** | 2012 | **2013 Tent** | 2012 | **2013 Tent** | **2013 New** |
| Lower Clark Fork | 200 & 201 | | 10 | **9** | **12** | 10 | **9** | 20 | **18** | **21** |
| | 202 & 203 | | 15 | **14** | **19** | 15 | **14** | 30 | **28** | **33** |
| Bitterroot | 204, 260 & 261 | | 2 | **2** | **3** | 5 | **2** | 10 | **4** | **5** |
| | 240 | | 3 | **2** | **3** | 5 | **2** | 10 | **4** | **5** |
| | 250 | | 7 | **4** | **6** | 7 | **4** | 14 | **8** | **10** |
| | 270 | | 7 | **4** | **6** | 7 | **4** | 14 | **8** | **10** |
| Blackfoot | 280, 281, 284 & 293 | | 7 | **5** | **7** | 7 | **5** | 14 | **10** | **12** |
| | 283 & 285 | | 8 | **5** | **7** | 8 | **5** | 16 | **10** | **12** |
| | 290, 291, 292, 293 & 298 | | 7 | **4** | **6** | 7 | **5** | 14 | **9** | **11** |
| Upper Clark Fork | 210 | | 0 | **0** | **0** | 7 | **3** | 7 | **3** | **3** |
| | 211 & 216 | | 2 | **2** | **3** | 5 | **5** | 7 | **7** | **8** |
| | 212 & 215 | | 0 | **0** | **0** | 6 | **6** | 6 | **6** | **6** |
| | 213 & 214 | | 1 | **1** | **1** | 2 | **2** | 3 | **3** | **3** |
| Totals | | | 69 | **52** | **73** | 91 | **66** | 165 | **118** | **139** |

Quotas in the Missoula Special Management Area would remain the same as in 2012.

2. **What is the objective of this proposed change? This could be a specific harvest amount or resulting population level or number of game damage complaints, etc.**

The objective of this proposed change is to calibrate our harvest prescription with current field data that better quantifies the actual lion population. We are committed to the objective of a 30% reduction in the lion population in Region 2, as endorsed by Commission actions in 2012, and again with adoption of the tentative recommendation in 2013. Current field data demonstrate that increased female harvest is required to accomplish this population reduction. We have retained the following information from the tentative proposal for the Commission's reference:

In short, this proposal is part of a multi-species approach to large carnivore management in Region 2, which strives to temporarily and periodically balance predator and prey

numbers for the near-term benefit of vulnerable prey, and the long-term benefit of carnivores. We propose to apply the findings of White et al. (2010) in Idaho that elk calf survival can be elevated in certain situations by increasing lion (and black bear) harvests. Our proposal assumes effective wolf harvest as a result of more liberal hunting regulations and the addition of trapping, and elevated black bear harvest due to a longer spring season. We predict that increased lion harvest may help mule deer populations rebound in the short-term (e.g., Hurley et al. 2011), due to the prey selection by lions for mule deer over white-tailed deer (Cooley et al. 2009).

We propose to reduce lion density by 30% over a period of 3 years across approximately 60 percent of Region 2 (i.e., west, north and south). In the remainder of Region 2, lions would be managed for stability, generally at current levels. This would be accomplished by applying a 35-37.5% average harvest rate on adult female lions in watersheds where approximately a 10% annual population reduction is desired (Robinson and DeSimone 2011) and an 11% average harvest rate on adult female lions in watersheds where population stability or a slight decline is the objective (Robinson and DeSimone 2011). Harvest rates may be focused at higher or lower levels at the hunting district scale while meeting the average for the watershed. The opportunity to harvest male lions would be similar to the historic average and would contribute little to population trend.

We further propose to zero-out female lion harvest in 2015 (following 3 years of significant female harvest) across most or all of that portion of Region 2 where a 35-37.5% harvest rate is initially applied. Female harvest might be focused in one or more hunting districts within this area for a longer period to test hypotheses related to prey response, but female harvest would not occur in most of the treatment area at that time. Female harvest rate would remain at approximately 11% in the eastern quarter of Region 2 if a stable population was still the objective. The opportunity to harvest male lions would be similar to the historic average and would contribute little to population trend.

In addition to the resilience of the species to harvest, and the conservative population estimation noted earlier, the lion population would be safeguarded in several ways.

1. Lion harvests and general indications of lion abundance would be revisited annually with FWP's and the Commission's annual review (April-June) of lion quota levels.

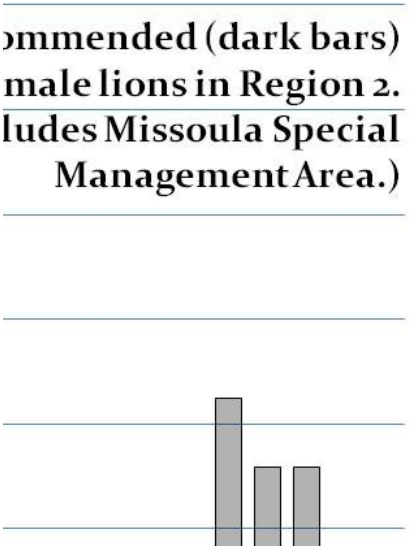
2. The uncertainty in lion population size would be mitigated by reducing uncertainty in population trajectory. Female harvest rates that are clearly high enough to drive the population downward put FWP, the Commission, and the public on common ground as to the trajectory of the lion population. Similarly, female harvest rates of zero irrefutably allow lion numbers to increase. While opportunities to hunt and harvest male lions would remain relatively constant, the Commission would annually evaluate whether to increase or decrease the lion population by turning on or turning off significant and meaningful female harvest.

3. The proposed female lion reduction (where reduction is prescribed) would occur in a short duration—envisioned to be 3 years—compared with the late 1990s reduction that extended over 8 years (Figure 12). A shortened duration of relatively high female harvest, with a target date set for curtailing the treatment, would avoid the extended effects on lion populations that could occur if a response in measurable objectives is not detected (Cooley et al. 2011).

4. The peak year of female harvest in the treatment would equal only 55% of the peak female harvest in 1999, and the 3-year projected treatment would equal only 54% of the three highest years of female harvest in 1998-2000.

5. We project that female harvest would be reduced to zero in many lion districts at the end of a 3-year treatment to rapidly increase female lion survival and promote emigration, eliminating unintended further declines (Cooley et al. 2011).

Protection of males from harvest contributes comparatively little to lion population growth (Robinson and DeSimone 2011). Therefore, the proposal to control lion numbers with female harvest leaves considerable and sustainable opportunity to hunt males, whether female harvest quotas are high or low. Special-license levels would remain relatively constant from year to year, varying mainly in the female quota.




3. **How will the success of this proposal be measured? This could be annual game or harvest surveys, game damage complaints, etc.**

FWP identified these measures of success in last year's proposal.



1. Harvests of >80% of the female lion quota in each of the four main watersheds in Region 2.

   Harvest of <80% of the female lion quota would call for a reassessment of female lion availability, hunter interest, and hunting conditions in affected watersheds or districts.

2. Harvest success rate of >40% of special license-holders.

   Harvest success of <40% would call for a reassessment of interest and effect of the special-license opportunity as currently structured.

3. Detections of lion tracks on furbearer survey routes of <6/100 miles in Regions 1-4.

   Detection of >6 lion-tracks/100 miles would indicate the need for a reassessment of the harvest treatment, if furbearer track survey protocols remain consistent.

4. Reduction of lion control actions in response to lion-human conflicts to <15 per year in Region 2.

   >15 control actions would call for a reassessment of indirect harvest effects on lion social structure, or the relatedness of lion conflicts to lion population density.

5. A stable harvest age structure for male lions and a declining harvest age-structure of female lions after 3-5 years.

   Stable harvest age structure of males suggests that harvest is matched by recruitment and meets the hunter opportunity objective. Declining harvest age-structure of female lions would be corroborative evidence of a desired, temporary, population effect and prompt reassessment of treatment duration.

6. >25 calves per 100 cows in late-winter elk populations in lion treatment areas where these data are available—e.g., HDs 200, 203, 204, 240, 250, 261, 270, 281, 282, 293.

Calf: cow ratios <25 would call for a reassessment of the hypothesis that female lion harvest is effective at growing prey.

7. Decreased cause-specific mortality of radioed elk calves attributable to lions, and reduced calf mortality overall, documented by the Bitterroot Elk Study in HDs 250 and 270, beginning with biological year 2013-14.

Failure to observe a measurable effect of the proposed harvest treatment on elk calves would call its efficacy into question.

8. The proactive reduction of female lion harvest to zero in many lion districts across Region 2 for the 2015-16 season, with consensus between FWP, the public and Commission.

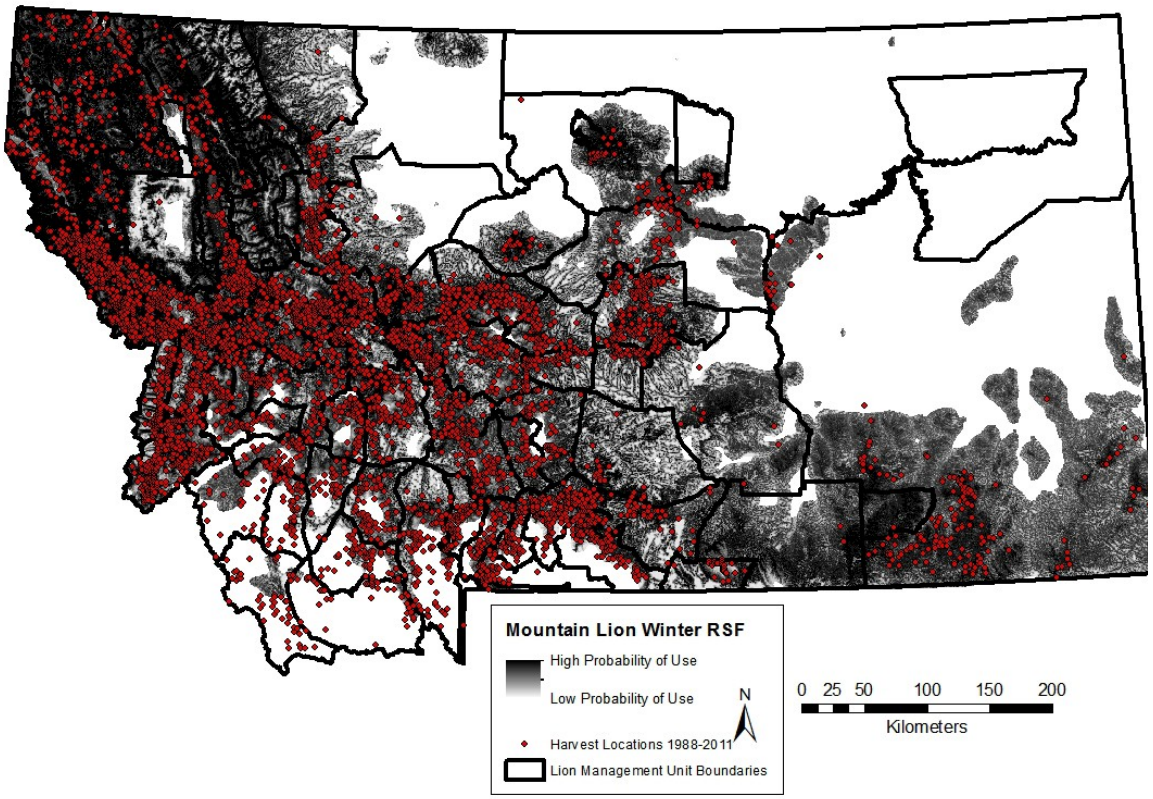
This would indicate that significant and meaningful female lion harvest was achieved rapidly and efficiently, promoting confidence among all parties that a biological treatment in fact occurred.

4. **What is the current population's status in relation to the management objectives? (i.e., state management objectives from management plan if applicable; provide current and prior years of population survey, harvest, or other pertinent information).**

Hugh Robinson (personal communication) is working with FWP on a preliminary RSF model depicting the probability of lion use across Montana, based on telemetry data collected in nine Montana lion studies. With this, Robinson has apportioned lion densities from the Garnets Lion Study to relative habitat distribution and quality.

From these data we assume with confidence that:

1. Lion numbers generally are at high levels—a second peak since the mid 20$^{th}$ century.
2. Lion numbers have increased at an elevated rate in the past 5 years.
3. Lion numbers will continue increasing above currently high levels without objective-directed female lion harvest.




5. **Provide information related to any weather/habitat factors, public or private land use or resident and nonresident hunting opportunity that have relevance to this change (i.e., habitat security, hunter access, vegetation surveys, weather index, snow conditions, and temperature / precipitation information).**

The allocation of lion hunting opportunity between resident and nonresident lion hunters is a longstanding point of contention in Region 2, and this issue became relevant again in license-year 2012 with the opening of an opportunity on February 1, 2013 for general-license holders to fill quotas left unfilled by special-license holders. The hybrid season structure is not scheduled for review this year in the biennial process. The quota increases prescribed herein are conservative so that we do not introduce excessive social conflict this year. However, increases are prudent now to avoid greater conflict in 2014.

6. **Briefly describe the contacts you have made with individual sportsmen or landowners, public groups or organizations regarding this proposal and indicate their comments (both pro and con).**

In February-March 2013, Region 2 sought out and obtained consensus in approach with key houndsmen in the Blackfoot, with the Bitterroot Houndsmen's Association, and with the Ravalli County Fish & Wildlife Association. We have also made preliminary contacts with these same individuals and groups regarding this latest proposed adjustment to the tentative adoption and the new information that is its basis. Resident public comment pertaining to the tentative lion proposals for Region 2 strongly supports the tentative or higher lion harvest quotas. Nonresident public comment pertaining to the tentative lion proposals for Region 2 generally does not support lion hunting.

Submitted by: Mike Thompson, Jay Kolbe, Vickie Edwards, and Ray Vinkey

Date: March 21, 2013

Approved: _____
Regional Supervisor / Date

Disapproved / Modified by: _____
Name / Date

Reason for Modification: